IN THE CLAIMS:

Amend claims 1 and 15 and add new claims 29 and 30, resulting in the following listing of the claims:

1. (Currently Amended) A method for digitizing a data signal, comprising the steps of:

receiving an input analog data signal <u>spanning a frequency range</u>;

splitting the received input analog data signal into a plurality of split signals<u>, each spanning a frequency range smaller than the original frequency range</u>;

mixing at least one of said split signals with a predetermined periodic function with a predetermined frequency<u>, thereby translating the frequency range of the at least one split signal</u>;

digitizing <u>each of</u> said split signals;

<u>converting the frequency range of the at least one split signal back to its original frequency range; and</u>

combining said digitized split signals mathematically to form a single output data stream that is a substantially correct representation of the received input signal <u>over the original frequency range.</u> <s>, wherein said predetermined periodic function is a low-distortion sinusoid.</s>

2. (Original) The method of claim 1, wherein the input analog data signal is split by a 50 Ohm splitter.

3. (Canceled)

4. (Original) The method of claim 1, further comprising the step of band limiting each of the split signals to a corresponding one of a plurality of predetermined band ranges before mixing.

5. (Previously Presented) The method of claim 4, wherein a frequency of said predetermined periodic function is at a low side of said band of said at least one split signal that is mixed.

6. (Previously Presented) The method of claim 4, wherein a frequency of said predetermined periodic function is at a high side of said band of said at least one split signal that is mixed.

7. (Previously Presented) The method of claim 1, further comprising the step of passing the mixed split signal through an image reject filter, having a second predetermined frequency.

8. (Previously Presented) The method of claim 7, wherein said image reject filter comprises an intrinsic bandwidth of a digitized channel used for digitizing said mixed spilt signal.

9. (Original) The method of claim 1, wherein said mixing is accomplished by a sampling action of a digitizer used for digitizing said at least one split signal.

10. (Previously Presented) A method for digitizing a data signal, comprising the steps of:

receiving an input analog data signal;

splitting the received input analog data signal into channels having a low frequency split signal and a high frequency split signal respectively;

mixing at least one of said low frequency and said high frequency split signals with a predetermined periodic function with a predetermined frequency;

digitizing said split signals;

band limiting each of the split signals to a predetermined band range;

upsampling each digitized split signal to a predetermined sample rate;

mixing said at least one of said low frequency and said high frequency split signals with a predetermined periodic function with said predetermined frequency, resulting in two images of said at least one split signal;

passing said at least one of said high frequency and said low frequency split signals through an image reject filter, having a second predetermined frequency, to remove an unwanted one of the two images; and

combining said digitized split signals mathematically to form a single output data stream that is a substantially correct representation of the received input signal.

11. (Previously Presented) The method of claim 10, further comprising the step of passing at least one of said low frequency and high frequency split signals through a band limiting filter.

12. (Previously Presented) The method of claim 10, further comprising the step of equalizing the low frequency and the high frequency split signals separately to compensate for non-ideal magnitude and phase characteristics of front-end and digitizing systems for each channel.

13. (Original) The method of claim 10, wherein the input analog data signal is split by a 50 Ohm splitter.

14. (Original) The method of claim 10, wherein said predetermined periodic functions are low-distortion sinusoids.

15. (Currently Amended) An apparatus for digitizing a data signal, comprising:

an input for receiving an input analog data signal spanning a frequency range;

a splitter for splitting the received input analog data signal into a plurality of split signals, each spanning a frequency range smaller than the original frequency range;

a mixer for mixing at least one of said split signals with a predetermined periodic function with a predetermined frequency, thereby translating the frequency range of the at least one split signal;

a digitizer for digitizing each of said split signals;

a converter for converting the frequency range of the at least one split signal back to its original frequency range; and

a combining unit for combining said digitized split signals mathematically to form a single output data stream that is a substantially correct representation of the original input signal

over the original frequency range ~~wherein said predetermined periodic function is a low distortion sinusoid~~.

16. (Original) The apparatus of claim 15, wherein said splitter is a 50 Ohm splitter.

17. (Canceled)

18. (Original) The apparatus of claim 15, further comprising a band limiter for band limiting each of the split signals to a corresponding one of a plurality of predetermined band ranges before mixing.

19. (Previously Presented) The apparatus of claim 18, wherein a frequency of said predetermined periodic function is at a low side of said band of said at least one split signal that is mixed.

20. (Previously Presented) The apparatus of claim 18, wherein a frequency of said periodic predetermined function is at a high side of said band of said at least one split signal that is mixed.

21. (Previously Presented) The apparatus of claim 15, further comprising an image reject filter having a second predetermined frequency for receiving and passing the mixed split signal.

22. (Previously Presented) The apparatus of claim 21, wherein said image reject filter comprises an intrinsic bandwidth of a digitized channel used for digitizing said mixed split signal.

23. (Original) The apparatus of claim 15, wherein said mixing is accomplished by a sampling action of a digitizer used for digitizing said at least one split signal.

24. (Previously Presented) An apparatus for digitizing a data signal, comprising:

an input for receiving an input analog data signal;

a splitter for splitting the received input analog data signal into channels having a low frequency split signal and a high frequency split signal respectively;

a first mixer for mixing at least one of said high frequency and said low frequency split signals with a predetermined periodic function with a predetermined frequency;

a digitizer for digitizing said split signals;

a band limiter for band limiting each of the split signals to a predetermined band range;

an upsampler for upsampling each digitized split signal to a predetermined sample rate;

a second mixer for mixing said at least one of said high frequency and said low frequency split signals with a predetermined periodic function with said predetermined frequency, resulting in two images of said at least one split signal;

an image reject filter, having a second predetermined frequency for receiving and passing said at least one of said high frequency and said low frequency split signals to remove an unwanted one of the two images; and

a combining unit for combining said digitized split signals mathematically to form a single output data stream that is a substantially correct representation of the received input signal.

25. (Original) The apparatus of claim 24, further comprising a band limiting filter for receiving and passing at least one of said high frequency and low frequency split signals.

26. (Previously Presented) The apparatus of claim 24, further comprising an equalizer for equalizing the high frequency and the low frequency split signals separately to compensate for non-ideal magnitude and phase characteristics of front-end and digitizing systems for each channel.

27. (Original) The apparatus of claim 24, wherein said splitter is a 50 Ohm splitter.

28. (Original) The apparatus of claim 24, wherein said predetermined periodic functions are low-distortion sinusoids.

29. (New) The method of claim 1, wherein said predetermined periodic function is a low-distortion sinusoid.

30. (New) The apparatus of claim 15, wherein said predetermined periodic function is a low-distortion sinusoid.